CLAIMS

1. An extended release osmo microsealed formulation comprising of an inner solid osmo-microsealed particulate phase consisting of a therapeutically effective amount of venlafaxine Active or salt thereof and atleast one osmogen/osmotic agent or osmo polymer, a diluent, a binder and a hydrophobic polymer membrane forming the core; an outer solid continous phase consisting of hydrophilic water soluble and /or swellable polymer, compressed into tablets and optionally coated with a functional coat.
2. The formulation of claim 1, wherein the inner osmo microsealed particulate phase and the outer continuous phase is in a ratio within the range of 0.3 : 1 to 10 : 1, preferably from 0.5 : 1 to about 4 : 1.
3. The formulation of claim 1, wherein the inner solid particulate phase contain active drug or salt there of in an amount within the range from about 5% to 75%, preferably from about 7 % to 65 % by weight, after inner solid particulate phase, ethyl cellulose and / or cellulose acetate in an amount within the range from 0.5 % to 65 % by weight, preferably from 2 % to 45 % by weight sodium chloride and / or mannitol in the range from 0.01 % to 25 % by weight, preferably from 0.05 % to 10 % by weight, Polyvinyl pyrolidone and / or Hydroxypropyl methylcellulose (low viscosity) in the range from 0.1 % to 10 % by weight, preferably from 0.5 % to 8 % by weight and it may contain microcrystalline cellulose and / or lactose in an amount within the range from about 0 % to 90 % by weight, preferably from 20 % to 80 % by weight, the above percentages being based on the weight of the inner solid particulate phase. Wherein the binding provided by diluents like lactose is sufficient, the specialty binder may be excluded.
4. The formulation of claim 1, wherein the inner solid particulate phase contains the hydrophobic polymer in an amount within the range from about 0.5% to 65% by wt. preferable from about 2% to 45% by wt. of the inner solid particulate phase.

5. The formulation of claim 4, wherein the hydrophobic polymer is used in the form of a non-aqueous solution, aqueous suspension, an aqueous emulsion or a water containing organic solvent solution.

6. The formulation of claim 4, wherein the hydrophobic polymer is selected from ethyl cellulose, methyl cellulose, amino methacrylate copolymer, methacrylic acid copolymers, methacrylic acid acrylic acid ethyl ester copolymer, methacrylic acid esters neutral copolymer, dimethyl aminoethyl methacrylate-methacrylic acid esters copolymer, Cellulose acetate, vinyl methyl ether/ maleic anhydride copolymers.

7. The formulation of claim 1, wherein the inner solid particulate phase contains osmogen in an amount within the range from about 0.01% to about 25% by wt.. preferably from 0.05% to about 10% by wti. Of the inner sokid particulate phase.

8. The formulation of claim 7, wherein the osmagens include organic and inorganic compounds such as salts, acids, bases, chelating agents, sodium chloride, lithium chloride, magnesium chloride, magnesium sulfate, lithium sulfate, potassium chloride, sodium sulfite, calcium bicarbonate, sodium sulfate, calcium sulfate, calcium lactate, d-mannitol, urea, tartaric acid, raffinose, sucrose, alpha-d-lactose monohydrate, glucose, sorbitol and the other similar or equivalent materials and combination thereof.

9. The formulation of claim 1, wherein the inner solid particulate phase contains a binder in the range from about 0.1% to about 10% by wt. preferably from 0.5% to about 8% by wt of the inner solid particulate phase.

10. The formulation of claim 9, wherein the binder is selected from polyacryl amide, poly-N-vinyl amide, poly-N-vinyl-acetamide, polyvinyl pyrolidone, starch, lactose, modified corn starch, sugars, gum accacia, alginic acid, carboxymethylcellulose sodium, tragacanth, gelatin, liquid glucose, methylcellulose, pregelatinized starch, polyethylene glycol, guar gum, polysaccharide, bentonites, invert sugars, collagen, albumin, polypropylene glycol, polyoxyethylene-polypropylene copolymer, polyethylene ester,

polyethylene sorbitan ester, polyethylene oxide, and hydroxypropyl methylcellulose and the other similar or equivalent materials or combination thereof.

11. The formulation of claim 10, wherein the viscosity of hydroxypropyl methylcellulose are of low viscosity preferably less than 10 Cps and more preferably 2 to 5 Cps.

12. The formulation of claim 1, wherein the inner solid particulate phase contains diluent in an amount within the range from about 0 to 90% by wt or preferably from about 20% to 80% by wt of the inner solid particulate phase.

13. The formulation of claim 12, wherein the diluent is an inert substance used as excipients to create the desired bulk flow properties and compression characteristic required in the preparation of tablets.

14. The formulation of claim 12, wherein the diluent is selected from dibasic calcium phosphate, kaolin, lactose, sucrose, mannitol, microcrystalline cellulose, powdered cellulose, precipitated calcium carbonate, sorbitol, and starch and the like materials.

15. The formulation of claim 1, wherein the inner solid particulate phase has a mean particle size within the range from about 0.01 micrometer to about 2mm, and preferably from about 50 micrometer to about 0.5 mm.

16. The formulation of claim 1, wherein the said outer solid continous phase contains hydrophilic polymers in an amount within the range from about 3% to 60% by wt and preferably from about 10% to 55% by wt of the uncoated dosage form/tablet.

17. The formulation of claim 16, wherein the hydrophilic polymer is selected from hydroxyethyl cellulose, hydroxypropyl cellulose, sodium alginate, carbomer (Carbopol™), sodium carboxymethyl cellulose, xanthan gum, guar gum, locust bean gum, poly vinyl acetate, polyvinyl alcohol and hydroxypropyl methylcellulose.

18. The formulation of claim 16, wherein the said outer solid continous phase include one or more fillers or excipients in an amount within the range from

about 1% to 70% by wt. and more preferably 10% to 40% by wt. of the uncoated dosage form/tablet.

19. The formulation of claim 16, wherein the said outer sold continous phase includes the recommended level of glidants, lubricants, dry binders , anti adherents.

20. The formulation of claim 1, wherein the functional coat provided optionally is about 2% to 20% by wt. preferably from 2.5% to 10% by wt. of the uncoated tablet core.

21. The formulation of claim 20, wherein the functional coating layer optionally provided over the outer solid continous phase containing particulates of inner-solid phase embedded therein, include one ore more film formers such as methacrylic acid esters neutral polymer, ethyl cellulose, cellulose acetate, polyvinyl alcohol-maleic anhydride copolymers, beta-pinene polymers, glyceryl esters of wood resins and the like.

22. The formulation of claim 20, wherein suitable colouring agent are added in the coating.

23. The formulation of claim 1, wherein plastizers are included to modify the properties and chracteristic of polymers used in the coats of inner particulate phase and/or on the coat of compressed tablets.

24. The formulation of claim 23, wherein the plastizers are selected from low molecular wt polymers, low molecular weight polymers, oligomers, copolymers, oils, small organic molecules, low molecular weight polyols having aliphatic hydroxyls, ester-type plasticizers, glycol ethers, poly(propylene glycol), multi-block polymers, single block polymers, low molecular weight poly(ethylene glycol), citrate ester-type plasticizers, triacetin, propylene glycol and glycerin. Such plasticizers can also include ethylene glycol, 1,2-butylene glycol, 2,3-butylene glycol, styrene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol and other poly(ethylene glycol) compounds, monopropylene glycol monoisopropyl ether, propylene glycol monoethyl ether, ethylene glycol monoethyl ether, diethylene glycol monoethyl

ether, sorbitol lactate, ethyl lactate, butyl lactate, ethyl glycolate, dibutylsebacate, acetyltributylcitrate, triethyl citrate, acetyl triethyl citrate, tributyl citrate and allyl glycolate or combination thereof.

25. The formulation of claim 24, wherein oils used are selected from peanut oil, sesame oil, cottonseed oil, corn oil and olive oil; fatty acids, such as oleic acid, stearic acid and isostearic acid; and fatty acid esters, such as ethyl oleate, isopropyl myristate, fatty acid glycerides, medium chain triglycerides and acetylated fatty acid glycerides.

26. The formulation of claim 1, wherein the dosage form/tablet includes antiadherent, glidant, lubricant, opaquant, colorant, polishing agents, acidifying agent, alkalizing agent, antioxidant, buffering agent and surface active agent.

27. The formulation of claim 26, whrein the antiadherent are selected from magnesium stearate, talc, calcium stearate, glyceryl behenate, Polyethylene glycols, hydrogenated vegetable oil, mineral oil, stearic acid and the like materials.

28. The formulation of claim 26, wherein the glidant are selected from cornstarch, talc, calcium silicate, magnesium silicate, colloidal silicon dioxide, silicon hydrogel and the like materials.

29. The formulation of claim 26, wherein the lubricant are selected from calcium stearate, magnesium stearate, mineral oil, stearic acid, and zinc stearate and the like materials.

30. The formulation of claim 26, wherein opaquant is used alone or in combination with colorant such as litanium dioxide and the like materials.

31. the formulation of calim 26, wherein the colorant are selected from FD&C Red No. 3, FD&C Red No. 20, FD&C Yellow No. 6, FD&C Blue No. 2, D&C Green No. 5, D&C Orange No. 5, D&C Red No. 8, caramel, and ferric oxide, red, other F.D. & C. dyes and natural coloring agents such as grape skin extract, beet red powder, beta-carotene, annato, carmine, turmeric, paprika and the like materials.

32. The formulation of claim 26, wherein the polising agent are selected from camauba wax, white wax and the like materials.

33. the formulation of claim 26, wherein the acidifying agent are selected from acetic acid, amino acid, citric acid, fumaric acid and other alpha hydroxy acids, such as hydrochloric acid, ascorbic acid, and nitric acid and the like materials.

34. The formulation of claim 26, wherein the alkalizing agent are selected from ammonia solution, ammonium carbonate, diethanolamine, monoethanolamine, potassium hydroxide, sodium borate, sodium carbonate, sodium bicarbonate, sodium hydroxide, triethanolamine, and trolamine and the like materials.

35. The formulation of claim 26, wherein the antioxidants are selected from ascorbic acid, ascorbyl palmitate, butylated hydroxyanisole, butylated hydroxytoluene, hypophophorous acid, monothioglycerol, propyl gallate, sodium ascorbate, sodium bisulfite, sodium formaldehyde sulfoxylate and sodium metabisulfite and the like materials.

36. The formulation of claim 26, wherein the buffering agent are selected from potassium metaphosphate, potassium phosphate, monobasic sodium acetate and sodium citrate anhydrous and dehydrate and the like materials.

37. The formulation of claim 1, wherein the dosage form/tablet includes surfaces active agent that improve wetting of the tablet core or coating layers.

38. The formulation of claim 37, wherein the surface active agent are soaps and synthetic detergents.

39. The formulaation of claim 38, wherein the soaps include fatty acid alkali metal, ammonium, and triethanolamine salts.

40. The formulation of claim 38, wherein the detergents are cationic detergents, for example, dimethyl dialkyl ammonium halides, alkyl pyridinium halides, and alkylamine acetates; anionic detergents, for example, alkyl, aryl and olefin sulfonates, alkyl, olefin, ether and monoglyceride sulfates, and sulfosuccinates; nonionic detergents, for example, fatty amine oxides, fatty acid alkanolamides, and poly(oxyethylene)-block-poly(oxypropylene) copolymers; and amphoteric

detergents, for example, alkyl .beta.-aminopropionates and 2-alkylimidazoline quaternary ammonium salts; and mixtures thereof.

41. A process of preparing an extended release osmo-microsealed formulation comprising the following steps:

i. forming osmo micrsealed inner solid particulate phase by granulation of venlafaxin active or salt thereof with one or more diluents to increase the bulk, binder to provide strength/hardness to the particulate one or more osmogen for generating osmatic pressure across the hydrpobic coating and hydrophobic polymer.

ii. embedding the inner solid particulate phase in an outer solid continous phase including one or more hydrophilic polymers.

iii. compressing the biphafic blend into tablet.

iv. coating the tablet optionally with a factional coat cantaining polymers.

42. A process as claimed in claim 41, wherein the inner osmo microsealed particle coat is obtained by granulation of drug, diluent, binder and osmogen mixture with the dispersion of the coating polymer forming a matrix of drug, diluent, osmogen and the polymer. If required, the granules are re-granulated till the entire coat is applied.

43. A process as claimed in claim 41, wherein the inner osmo microsealed particle coat is obtained by granulation of drug, diluent and binder with the solution of osmogen. The granulation is further continued with the dispersion of hydrophobic polymer. If required, the granules are re-granulated till the entire coat is applied.

44. A process as claimed in claim 41, wherein the inner osmo microsealed particle coat is obtained by granulation of drug, diluent and osmogen with the solution of binder. The granulation is further continued with the dispersion of hydrophobic polymer. If required, the granules are re-granulated till the entire coat is applied.

45. A process as claimed in claim 41, wherein the inner osmo microsealed particle coat is obtained by partial granulation of the drug, diluent and osmogen mixture

with the dispersion of coating polymer forming a matrix of drug, diluent, osmogen and the polymer. The granules are further coated on a fluid bed processor with the remaining quantity of the hydrophobic polymer.

46. A process as claimed in claim 41, wherein the inner osmo microsealed particle are obtained by granulation of the drug, osmogen and binder. The granules are further coated on a fluid bed processor with the hydrophobic coating polymer.

47. A process as claimed in claim 41, wherein the inner osmo microsealed particle are obtained by granulation of the drug, binder and diluent using a solution of osmogen. The granules are further coated on a fluid bed processor with the hydrophobic coating polymer

48. A process as claimed in claim 41, wherein the inner osmo microsealed particle. are obtained by extrusion-spheronization of wet blended mass of drug, binder, diluent and osmogen. The mini spherules obtained are further coated on a fluid bed processor with the hydrophobic coating polymer.

49. The process of preparing extended release osmo microsealed Venlafaxine Hydrochloride comprising of the following steps,

a. dry blending Venlafaxine Hydrochloride, Microcrystalline cellulose, Lactose., and Povidone;

b. granulating the blended mixture of step (a) with the solution of Sodium Chloride, continuing the granulation with aqueous dispersion additives sincleas of ethyl cellulose, forming the inner osmo microsealed particulate phase;

c. drying and lubricating the dried inner osmo microsealed particulate phase of step (b) with Hydroxypropyl Methylcellulose, , Talc, and Magnesium stearate forming outer continuous phase;

d. compressing the tablets of suitable shape from the lubricated mass of step (c);

e. coating the said tablets of step (d) with an aqueous dispersion of Ammonio Methacrylate Copolymer using glaident, titanium, opalifying agent, plasticizer and suitable color.

50. A process as claimed in claim 41, wherein the inner osmo microsealed phase contain the drug Venlafaxine Hydrochloride, the solid content of ethyl cellulose aqueous dispersion, microcrystalline cellulose, Lactose, povidone in the range from, and sodium chloride.

51. A process as claimed in claim 41, wherein the said outer continuous phase contains Hydroxypropyl Methylcellulose, Talc, Magnesium stearate.

52. A process as claimed in claim 41, wherein the coating dispersion of the tablet in addition to Ammonio Methacrylate Copolymer contains Talc as a glidant, Titanium dioxide as opacifying agent, Triethyl citrate as plasticizer and suitable color, of the tablet composition in addition.

53. A process claimed in claim 41, wherein the aqueous ethyl cellulose dispersion contains ethyl cellulose additives such as Oleic acid, Cetyl alcohol, Medium chain triglycerides, Ammonium Hydroxide, Sodium lauryl sulphate and Dimethylpolysiloxane.

54. A process as claimed in claim 41, wherein the said Venlafaxine Hydrochloride Cellulose Lactose and Providone are shifted through #60 using a turbo shifter before dry blending.

55. A process as claimed in claim 41, wherein the inner osmo microsealed particulate phase granules are dried in a tray dryer of temperature 55 to 60^0 C and the dried granules are passed through #20.

56. A process as claimed in claim 41, wherein the dried granules of inner osmo microsealed particulate phase are granulated with the dispersion of ethyl cellulose to acquire the necessary loading of ethyl cellulose.